WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a crystalline semiconductor film containing a metal element over a transparent substrate;

irradiating with a first laser beam to the crystalline semiconductor film in a direction from the crystalline semiconductor film to the substrate after forming the crystalline semiconductor film; and

irradiating with a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the crystalline semiconductor film after irradiating with the first laser beam.

2. A method of manufacturing a semiconductor device according to claim 1, wherein the first laser beam is a pulsed laser beam having a wavelength range from a visible region to a vacuum ultraviolet region, and the second laser beam is a pulsed or continuous wave laser beam having a wavelength range from a visible region to a vacuum ultraviolet region.

3. A method of manufacturing a semiconductor device according to claim 1, wherein each of the first and second laser beams is emitted from a laser selected from the group consisting of a gas laser, a solid-state laser, and a metal laser.

4. A method of manufacturing a semiconductor device according to claim 1, wherein the first laser beam is emitted from a laser selected from the group consisting of an excimer laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a copper vapor laser, and a gold vapor laser.

5. A method of manufacturing a semiconductor device according to claim 4, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

6. A method of manufacturing a semiconductor device according to claim 1,

wherein the first laser beam is emitted from a laser selected from the group consisting of second, third, or fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

7. A method of manufacturing a semiconductor device according to claim 1, wherein the second laser beam is emitted from a laser selected from the group consisting of an excimer laser, an Ar laser, a Kr laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a He-Cd laser, a copper vapor laser, and a gold vapor laser.

8. A method of manufacturing a semiconductor device according to claim 7, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

9. A method of manufacturing a semiconductor device according to claim 1, wherein the second laser beam is emitted from a laser selected from the group consisting of second, third, and fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

10. A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film over a transparent substrate;

adding a metal element to the amorphous semiconductor film followed by heating thereby forming a crystalline semiconductor film after forming the amorphous semiconductor film;

irradiating with a first laser beam to the crystalline semiconductor film in a direction from the crystalline semiconductor film to the substrate, thereby melting and crystallizing the crystalline semiconductor film after adding the metal element; and

irradiating with a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the crystalline semiconductor film, thereby melting and crystallizing the crystalline semiconductor film after irradiating with the first laser beam.

11. A method of manufacturing a semiconductor device according to claim 10, wherein the first laser beam is a pulsed laser beam having a wavelength range from a

visible region to a vacuum ultraviolet region, and the second laser beam is a pulsed or continuous wave laser beam having a wavelength range from a visible region to a vacuum ultraviolet region.

12. A method of manufacturing a semiconductor device according to claim 10, wherein each of the first and second laser beams is emitted from a laser selected from the group consisting of a gas laser, a solid-state laser, and a metal laser.

13. A method of manufacturing a semiconductor device according to claim 10, wherein the first laser beam is emitted from a laser selected from the group consisting of an excimer laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a copper vapor laser, and a gold vapor laser.

14. A method of manufacturing a semiconductor device according to claim 13, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

15. A method of manufacturing a semiconductor device according to claim 10, wherein the first laser beam is emitted from a laser selected from the group consisting of second, third, or fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

16. A method of manufacturing a semiconductor device according to claim 10, wherein the second laser beam is emitted from a laser selected from the group consisting of an excimer laser, an Ar laser, a Kr laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a He-Cd laser, a copper vapor laser, and a gold vapor laser.

17. A method of manufacturing a semiconductor device according to claim 16, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

18. A method of manufacturing a semiconductor device according to claim 10, wherein the second laser beam is emitted from a laser selected from the group consisting

of second, third, or fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

19. A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film over a transparent substrate;

adding a metal element to the amorphous semiconductor film followed by heating thereby forming a crystalline semiconductor film after forming the amorphous semiconductor film;

irradiating with a first laser beam to the crystalline semiconductor film in a direction from the crystalline semiconductor film to the substrate, thereby melting and crystallizing the crystalline semiconductor film after adding the metal element; and

irradiating with a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the crystalline semiconductor film, thereby reducing defects in the crystalline semiconductor film after irradiating with the first laser beam.

20. A method of manufacturing a semiconductor device according to claim 19, wherein the first laser beam is a pulsed laser beam having a wavelength range from a visible region to a vacuum ultraviolet region, and the second laser beam is a pulsed or continuous wave laser beam having a wavelength range from a visible region to a vacuum ultraviolet region.

21. A method of manufacturing a semiconductor device according to claim 19, wherein each of the first and second laser beams is emitted from a laser selected from the group consisting of a gas laser, a solid-state laser, and a metal laser.

22. A method of manufacturing a semiconductor device according to claim 19, wherein the first laser beam is emitted from a laser selected from the group consisting of an excimer laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a copper vapor laser, and a gold vapor laser.

23. A method of manufacturing a semiconductor device according to claim 22,

wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

24. A method of manufacturing a semiconductor device according to claim 19, wherein the first laser beam is emitted from a laser selected from the group consisting of second, third, or fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

25. A method of manufacturing a semiconductor device according to claim 19, wherein the second laser beam is emitted from a laser selected from the group consisting of an excimer laser, an Ar laser, a Kr laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a He-Cd laser, a copper vapor laser, and a gold vapor laser.

26. A method of manufacturing a semiconductor device according to claim 25, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

27. A method of manufacturing a semiconductor device according to claim 19, wherein the second laser beam is emitted from a laser selected from the group consisting of second, third, and fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

28. A method of manufacturing a semiconductor device, comprising the steps of:

forming an amorphous semiconductor film over a transparent substrate;

adding a metal element to the amorphous semiconductor film followed by heating thereby forming a crystalline semiconductor film after forming the amorphous semiconductor film;

irradiating with a first laser beam to the crystalline semiconductor film in a direction from the crystalline semiconductor film to the substrate after adding the metal element; and

irradiating with a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the crystalline semiconductor firm after irradiating with the first laser beam.

29. A method of manufacturing a semiconductor device according to claim 28, wherein the first laser beam is a pulsed laser beam having a wavelength range from a visible region to a vacuum ultraviolet region, and the second laser beam is a pulsed or continuous wave laser beam having a wavelength range from a visible region to a vacuum ultraviolet region.

30. A method of manufacturing a semiconductor device according to claim 28, wherein each of the first and second laser beams is emitted from a laser selected from the group consisting of a gas laser, a solid-state laser, and a metal laser.

31. A method of manufacturing a semiconductor device according to claim 28, wherein the first laser beam is emitted from a laser selected from the group consisting of an excimer laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a copper vapor laser, and a gold vapor laser.

32. A method of manufacturing a semiconductor device according to claim 31, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

33. A method of manufacturing a semiconductor device according to claim 28, wherein the first laser beam is emitted from a laser selected from the group consisting of second, third, and fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.

34. A method of manufacturing a semiconductor device according to claim 28, wherein the second laser beam is emitted from a laser selected from the group consisting of an excimer laser, an Ar laser, a Kr laser, a glass laser, a ruby laser, an alexandrite laser, a Ti: sapphire laser, a He-Cd laser, a copper vapor laser, and a gold vapor laser.

35. A method of manufacturing a semiconductor device according to claim 34, wherein the excimer laser is selected from the group consisting of a XeCl excimer laser, a KrCl excimer laser, an ArF excimer laser, a KrF excimer laser, and a XeF excimer laser.

36. A method of manufacturing a semiconductor device according to claim 28, wherein the second laser beam is emitted from a laser selected from the group consisting of second, third, and fourth harmonics of a YAG laser, a YVO_4 laser, and a YLF laser.